REMARKS

Claims 1-14, 16-23 are pending in the above identified application. The Examiner has rejected claims 1-3, 5, 8-9, 12, 14, 16-17, 21, 23 and objected to claims 4, 6-7, 10-11, 13, 18-20, 22.

Applicants amended Claim 1 to correct a typographical error.

Correction of Drawings

In response to Examiner's objection, new corrected Sheet 1 of drawing is introduced by this amendment. The corrected drawing satisfies requirements for formal patent drawings.

Also, the captions on Figure 1 have been changed from German to their English translations as follows:

German	English
Gitter	Grating
Modus	Mode
Moden-Wandlung	Mode Conversion
K	core
M	sheath
GF	glass fiber

Support for this amendment can be found in the original specification on page 9, ll. 9-12, and on page 19 entitled "Figure Captions," and in the originally filed Figure 1. Therefore, no new matter has been introduced by this amendment. The Applicants respectfully request entry of this amendment.

Claim Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-3, 5, 8-9, 12, 14, 16-17, 21, 23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,903,683 to Lowry (hereafter Lowry) in view of U.S. Patent No. 5,878,071 to Delavaux (hereafter Delavaux).

1. Examiner stated that even though

> Lowry fails to specifically disclose two pairs of chirped Bragg gratings, . . . Lowry does disclose that the number of gratings is not limited to the three shown in Figure 6, any number of gratings can be used in order to allow for a more complicated delay or dispersion compensation (Column 9). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used two pairs or four gratings in order to obtain the desired dispersion compensation."

Office Action of March 18, 2004, page 3, lines 5-10. Applicants respectfully disagree.

Under 35 U.S.C. §103(a) "a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

Lowry teaches a combination of three gratings. In this combination, light 25 enters a fiber in the initial propagating mode 1. The portion of this light is reflected from a first backward-reflecting grating 23 in mode 2 and moves in the opposite direction. This mode 2 portion of the light then encounters the first forward-reflecting grating 22. Grating 22 reflects portion of the mode 2 light, converting it to a number of forward propagating modes (modes 2 and 3). The last grating of the combination, the forward-diffracting grating 24, converts mode 2 and mode 3 portions of the light into mode 1. See Lowry at col. 8, l. 60 - col. 9, l. 35. Therefore, in the combination of Lowry the light changes direction twice and then is restored to the initial mode on the third grating. Such third grating must therefore be a long-periodic grating (LPG grating).

In the combination of the present invention, the mode restoring function is performed by a second pair of a forward-reflecting and a backward-reflecting fiber Bragg gratings instead of a single forward-diffracting grating 24 taught by Lowry. As a result the system of the present invention allows

avoidance of LPG gratings which are known for their poor filter characteristics and require a significantly longer physical length.

As a result, Lowry does not teach "a transmission component . . . comprising . . . two pairs of Bragg gratings, of which at least one pair has chirped Bragg gratings, in which a first Bragg grating in each said pair reflects an arriving light beam back to an other another Bragg grating in said pair, in a direction approximately opposite a forward direction of incidence of the light beam, and from which other Bragg grating the light beam emerges substantially along the direction of incidence" as required by Claims 1 and 21.

Also, it would not have been obvious for a person skilled in the art to replace the third forward-diffracting grating 24 of Lowry with a pair of backward-diffracting and forward-diffracting gratings of the present invention. Delavaux does not cure this deficiency in teachings of Lowry.

2. Examiner stated that "[s]ince Lowry discloses the dispersion compensation is wavelength dependent and a known method to compensate dispersion is by using a wavelength dependant chirped Bragg grating, it would have been obvious . . . to have used a chirped Bragg grating in order to obtain the wavelength dependant feature in the waveguide." Office Action, p. 3, ll. 13-18. Applicants respectfully disagree.

By definition a chirped gratings "have a non-uniform period along their length." Raman Kashyap, Fiber Bragg Gratings, Ch. 7 "Chirped Fiber Bragg Gratings," p. 311.

Lowry described gratings of his system as follows: "each set of gratings may be defined by the user to select certain wavelengths of the optical signal to either pass unaltered through the grating or to be diffracted into a different propagating mode." Lowry at col. 4, ll. 63-66. Hence, the gratings of Lowry are the usual non-chirp gratings with uniform grating period. In order to accomplish

predetermined delay and dispersion, Lowry uses a system where "[l]ight propagating in different modes propagates at different group velocity and dispersion which may be used to either add delay (positive or negative) or compensate for dispersion." Lowry at col. 7, ll. 28-31.

By contrast, in the present system the Applicants create predetermined dispersion by using "at least one chirped Bragg grating" in each pair of fiber Bragg gratings. Claims 1, 21.

As a result, Lowry does not teach "[a] transmission component . . . comprising . . . two pairs of Bragg gratings, of which at least one pair has chirped Bragg grating," as in Claim 1, or "[a] method for producing normal and anormal chromatic dispersions which can be predetermined, comprising applying an incident light beam in a forward direction onto a glass fiber optical waveguide structured to carry not only a fundamental mode but also at least one other mode, and at least two pairs of Bragg gratings, of which at least one pair had chirped Bragg gratings," as in Claim 21. Delavaux does not cure this deficiency in the teachings of Lowry. Therefore, Claims 1 and 21 are patentable over Lowry in view of Delavaux.

Claims 2, 3, 5, 8-9, 12, 14, 16-17 are dependent on Claim 1 and Claim 23 is dependent on Claim 21. Therefore these claims are patentable over the combination of Lowry and Delavaux for at least the same reasons as Claims 1 and 21.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS:

In response to Examiner's objection, Applicants submit the replacement one sheet of formal drawings containing Figure 1.

Applicants also submit amended Sheet 1 of formal drawings. Applicants replaced German designations on Figure 1 with corresponding English translations.